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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,783	08/01/2006	Seiji Kurata	F-9081	6057

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EXAMINER
FOGARTY, CAITLIN ANNE

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/583,783	KURATA ET AL.	
	Examiner	Art Unit	
	CAITLIN FOGARTY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 8-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2, and 8-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/19/2006, 11/3/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1, 2, and 8 – 17 are pending and presented for examination. Claims 3 – 7 have been cancelled.

Information Disclosure Statement

2. The information disclosure statements (IDS) were submitted on June 19, 2006 and November 3, 2006. These submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Claim Objections

3. Claim 1 is objected to because of the following informalities: The parentheses around "with a proviso that C/N: 6 or less" should be removed in order to clarify whether the contents within the parentheses are a further claim limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1, 2, and 8 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai (US 5,458,703).

With respect to instant claim 1, col. 2 lines 35 – 55 and Example 1 of Nakai teach a hot work tool steel with a clearly overlapping composition as seen in Table 1 below.

Table 1

Element	Instant Claim 1 (mass%)	Nakai (mass %)	Overlapping Range (mass%)
C	0.10 – 0.35	0.15 – 1.5	0.15 – 0.35
Si	< 0.80	≤ 2.5	< 0.80
Mn	≤ 3.0	≤ 1.0	≤ 1.0
Cr	2.0 – 7.0	0.4 – 21	2.0 – 7.0
1/2W + Mo	0.3 – 5.0	≤ 18 W ≤ 5.0 Mo	0 – 14
N	0.05 – 0.50	≤ 0.50	0.05 – 0.50
C + N	0.20 – 0.60	0.15 – 2	0.20 – 0.60
O	≤ 0.0100	---	0
P	≤ 0.050	≤ 0.040	≤ 0.040
Al	≤ 0.050	≤ 1.20	≤ 0.050
Fe	Balance	Balance	Balance

Nakai does not specifically teach that the hot work tool steel is excellent in resistance to melting loss. However, it would be expected that the hot work tool steel of Nakai would have the same physical properties as that of the instant steel because it has an overlapping composition with the instant steel. See MPEP 2112. Also, Nakai does not teach that the tool steel has a ratio of C/N of 6 or less. However, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re*

Pilling, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In the absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. *In re Austin, et al.*, 149 USPQ 685, 688.

In regards to instant claim 2, col. 2 lines 35 – 51 of Nakai disclose that the hot work tool steel may further contain less than or equal to 3.0 mass% V which overlaps with the composition recited in instant claim 2.

Regarding instant claims 8 and 9, col. 2 lines 35 – 55 of Nakai disclose a hot work tool steel with a clearly overlapping composition as seen in Table 2 below.

Table 2

Element	Instant Claims 8 & 9 (mass%)	Nakai (mass %)	Overlapping Range (mass%)
C	0.10 – 0.35	0.15 – 1.5	0.15 – 0.35
Si	< 0.80	≤ 2.5	< 0.80
Mn	≤ 3.0	≤ 1.0	≤ 1.0
Cr	2.0 – 7.0	0.4 – 21	2.0 – 7.0
1/2W + Mo	0.3 – 5.0	≤ 18 W ≤ 5.0 Mo	0 – 14
N	0.05 – 0.50	≤ 0.50	0.05 – 0.50
C + N	0.20 – 0.60	0.15 – 2	0.20 – 0.60
O	≤ 0.0100	---	0
P	≤ 0.050	≤ 0.040	≤ 0.040
Al	≤ 0.050	≤ 1.20	≤ 0.050
Fe	Balance	Balance	Balance
V (Claims 2 &9)	0.01 – 0.3	≤ 3.0	0.01 – 0.3
Ni or Co	≤ 2.0 Ni ≤ 5.0 Co	≤ 18.0 Ni ≤ 21.0 Co	≤ 2.0 Ni ≤ 5.0 Co
Ti, Ta, B, or Cu	≤ 1.0 Ti ≤ 1.0 Ta ≤ 0.010 B ≤ 1.0 Cu	≤ 2.5 Ti ≤ 1.25 Ta ≤ 0.010 B ≤ 2.0 Cu	≤ 1.0 Ti ≤ 1.0 Ta ≤ 0.010 B ≤ 1.0 Cu
S, Ca, Se, Te, Zr, Mg, or Y	≤ 0.050 S ≤ 0.0100 Ca ≤ 0.0100 Se ≤ 0.0100 Te	≤ 0.040 S --- Ca --- Se --- Te	≤ 0.040 S 0 Ca 0 Se 0 Te

	≤ 0.0100 Zr ≤ 0.0100 Mg ≤ 0.100 Y	≤ 1.25 Zr --- Mg --- Y	≤ 0.0100 Zr 0 Mg 0 Y

Since the claimed compositional ranges of claims 1, 2, 8, and 9 either overlap or are within the ranges disclosed by Nakai, a prima facie case of obviousness exists. See MPEP 2144.05. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed hot work tool steel alloy composition from the hot work tool steel alloy composition disclosed by Nakai because Nakai teaches the same utility (i.e. a mold member) in the whole disclosed range.

With respect to instant claims 10 – 13, col. 1 line 36 – col. 2 line 31 of Nakai teach that the hot work tool steel may be formed into a metal mold member. Nakai does not specifically teach that the mold member is excellent in resistance to melting loss. However, it would be expected that the mold member of Nakai would have the same physical properties as that of the instant mold member because it has an overlapping composition with the instant mold member. See MPEP 2112.

7. Claims 14 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai (US 5,458,703) as applied to claim1, 2, 8, and 9 above, and further in view of Sera et al. (US 6,479,013).

Nakai is applied to instant claims 1, 2, 8, and 9 as discussed above.

With respect to instant claims 14 – 17, col. 1 line 36 – col. 2 line 31 of Nakai teach that the hot work tool steel may be formed into a metal mold member. Because Nakai's tool steel would be excellent in resistance to melting loss as stated above, Nakai's metal mold member made from the tool steel would have the same physical properties as that of the instant mold member.

Nakai differs from instant claims 14 – 17 because it does not teach that that the surface layer of the mold member, because of modification by a surface treatment, has a higher resistance to Al-melting loss than that of the base metal. However, col. 3 lines 39 – 67 of Sera et al. teach a tool steel that can be used to make a mold member with a similar composition with that of the instant tool steel. Sera et al. also teaches in col. 2 lines 10 – 16 that it is well known in the art to surface treat the tool steel component by nitrocarburizing in order to form a protective layer. It would have been obvious to one of ordinary skill in the art to surface treat the tool steel of Nakai as taught by Sera et al. in order to form a protective layer on the component and to minimize the corrosive effects of molten non-ferrous metals or alloys such as aluminum alloys (see col. 2 lines 10 – 16 of Sera et al.). Therefore, it would be expected that the tool steel of Nakai in view of Sera et al. would have a surface layer that has, because of modification thereof by a surface treatment, a higher resistance to Al-melting loss than that of the base metal.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAITLIN FOGARTY whose telephone number is (571)270-3589. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

CF